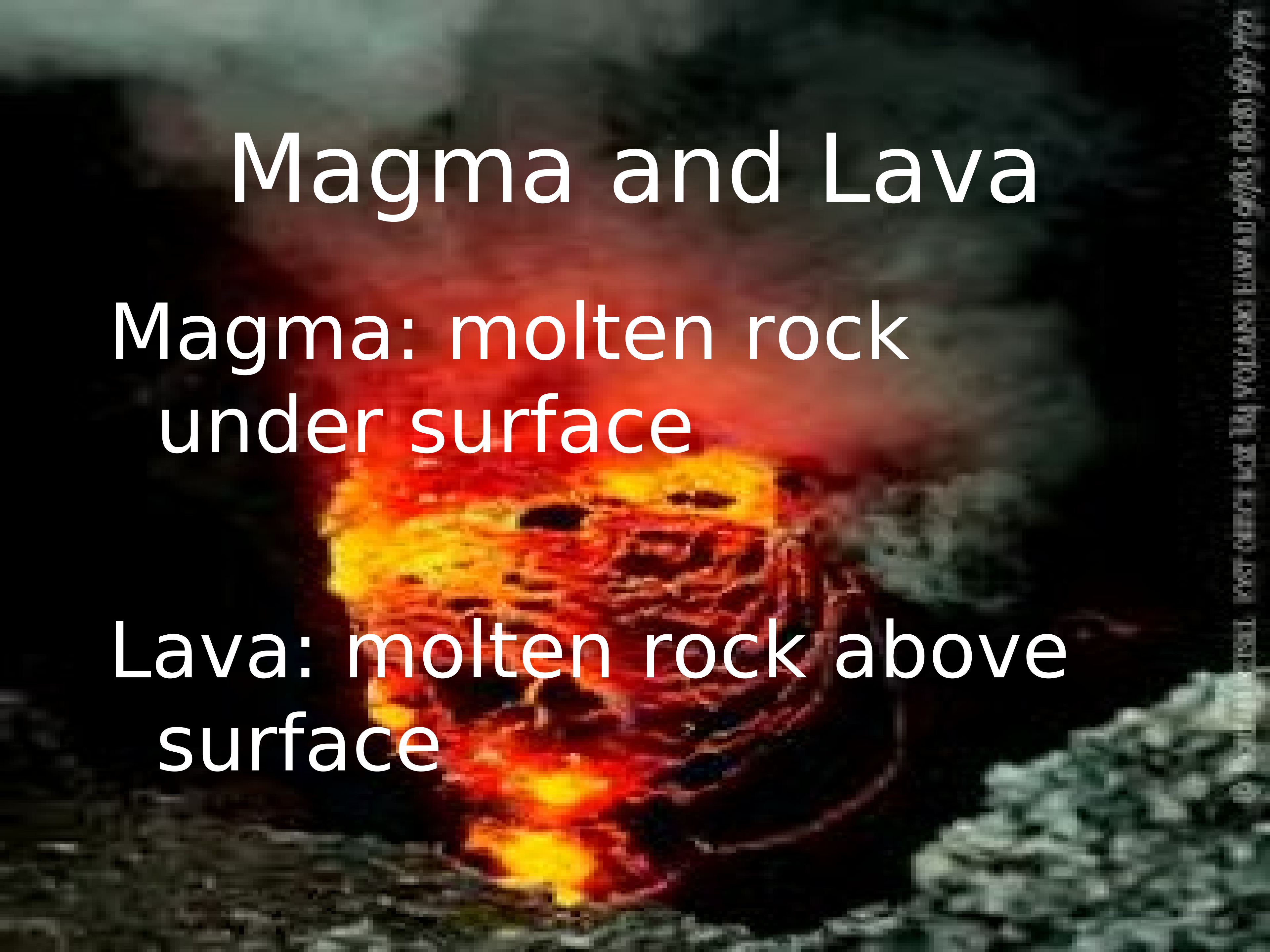
Volcano

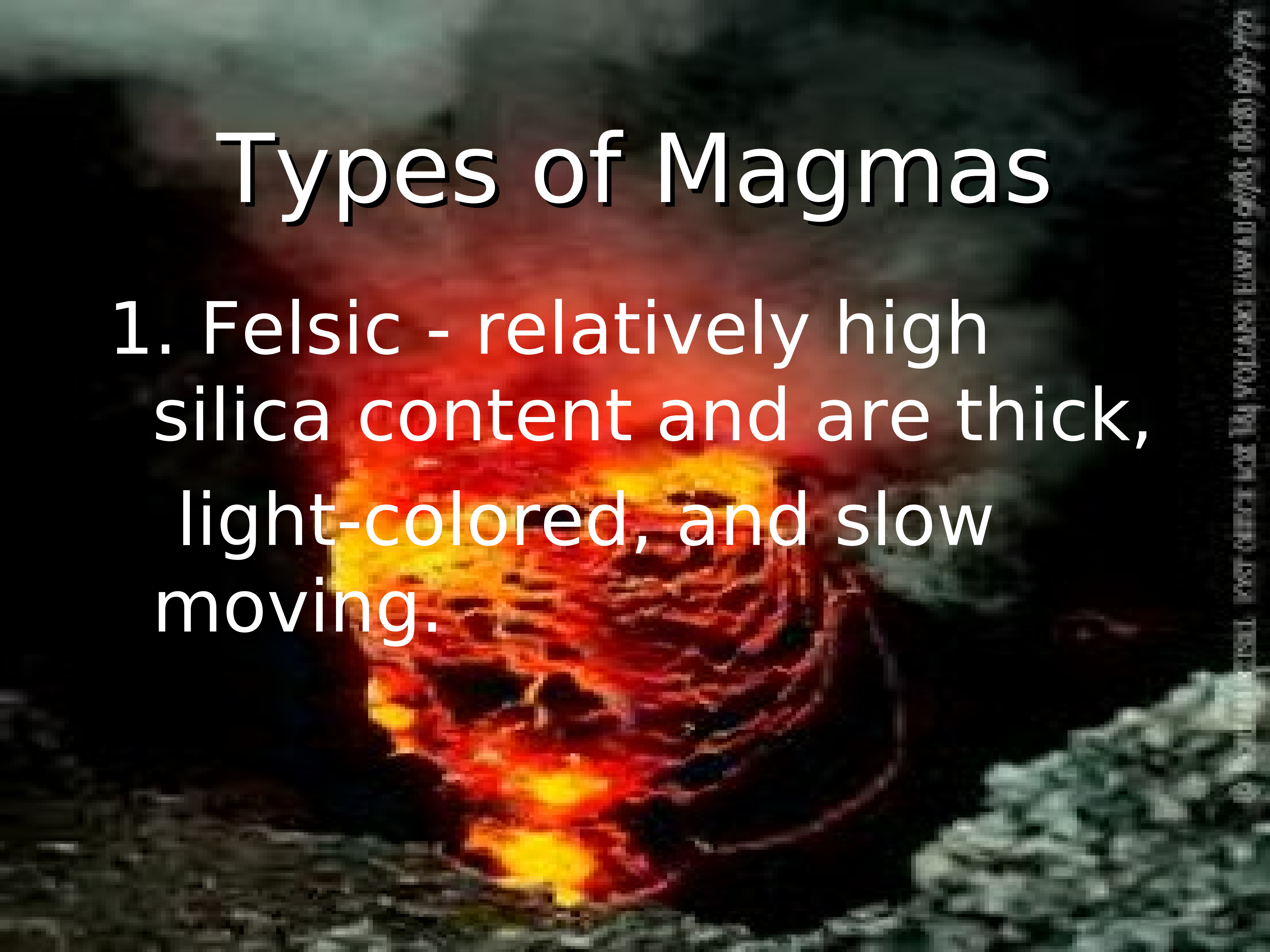
Materials that build up from within the earth around an opening in the crust



Magma and Lava

Magma: molten rock under surface

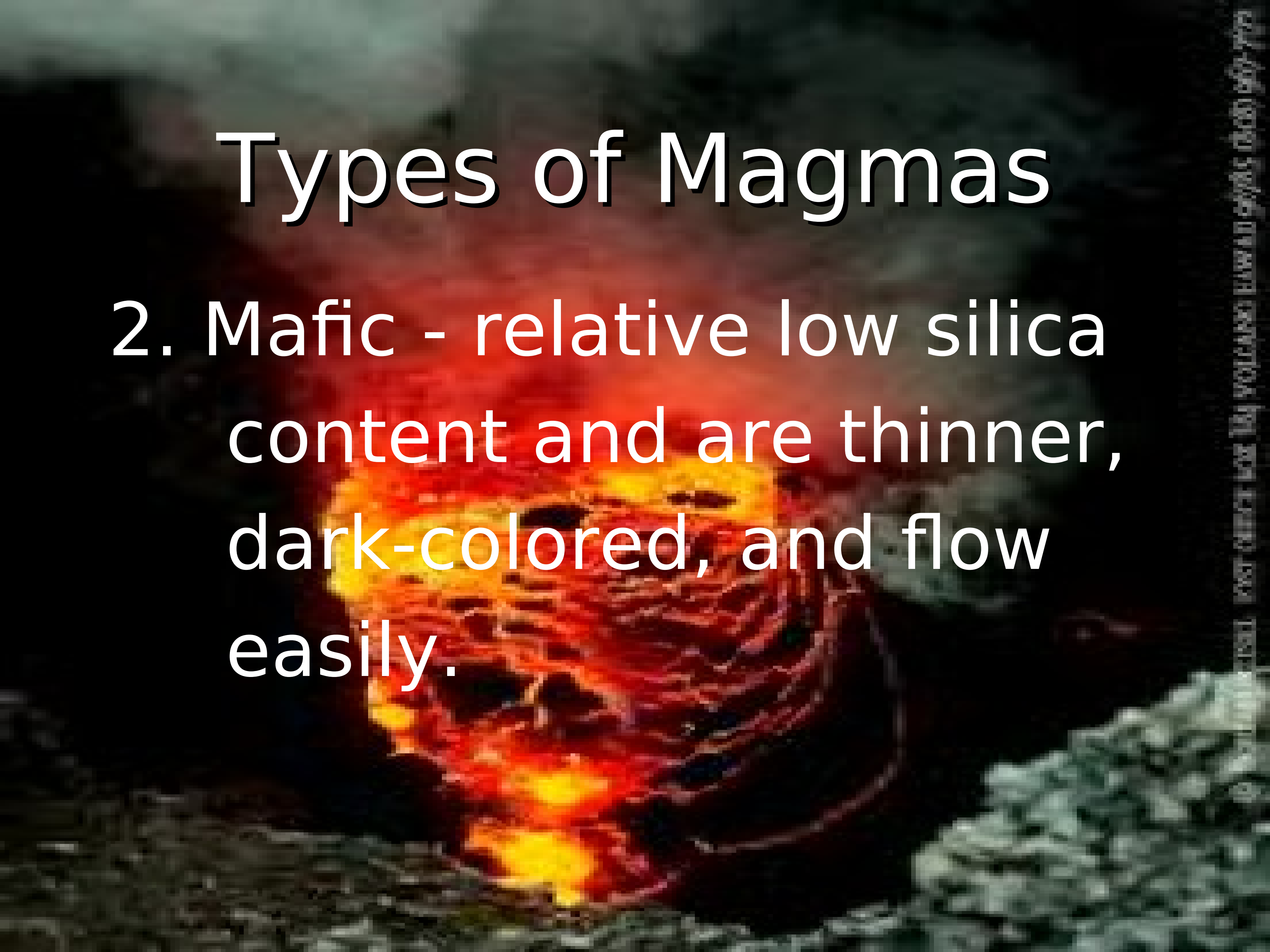
Lava: molten rock above surface



Types of Magmas

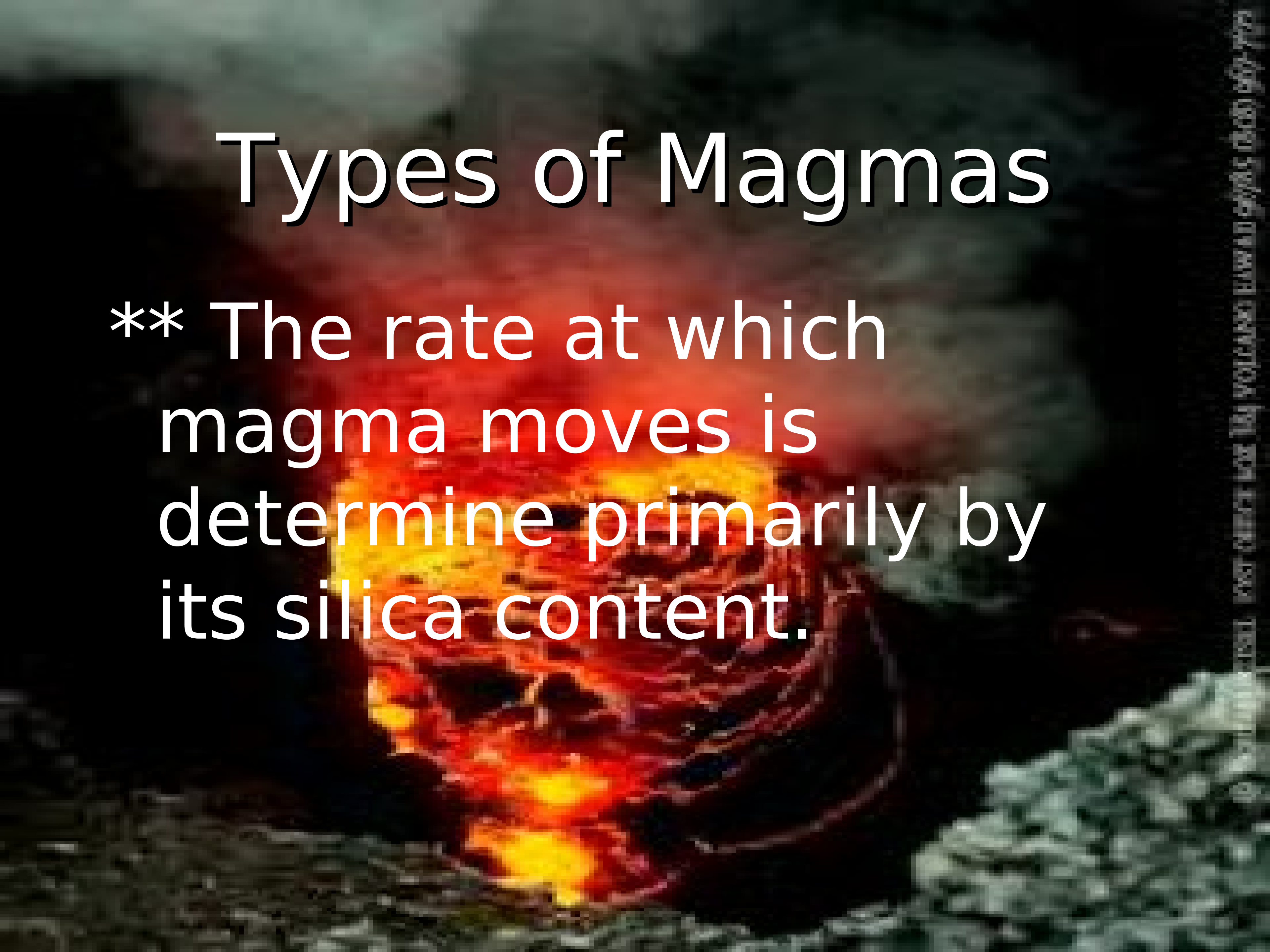
1. Felsic - relatively high silica content and are thick, light-colored, and slow moving.

Types of Magmas

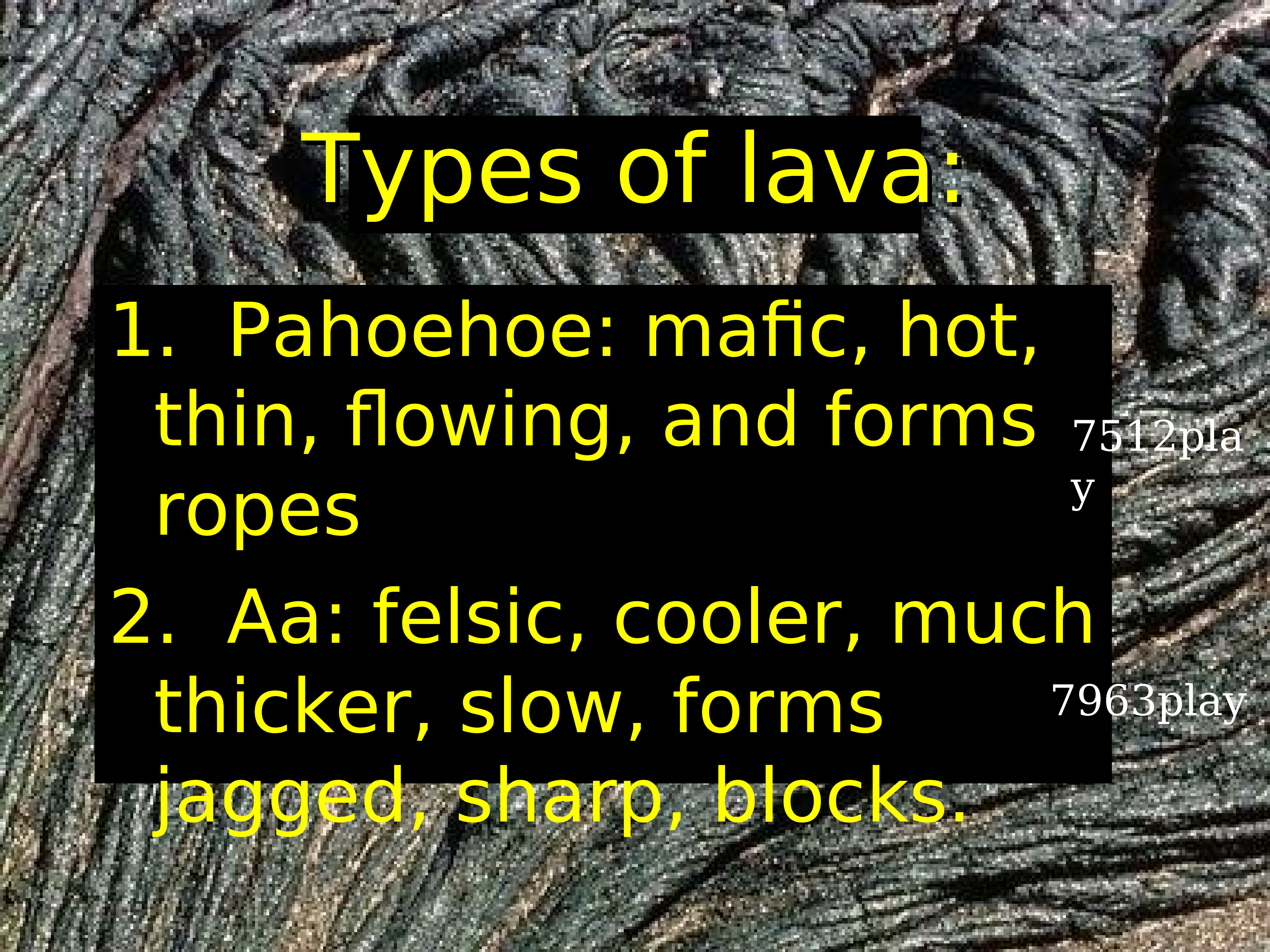


2. Mafic - relative low silica content and are thinner, dark-colored, and flow easily.

Types of Magmas



** The rate at which magma moves is determine primarily by its silica content.



Types of lava:

1. Pahoehoe: mafic, hot, thin, flowing, and forms ropes
2. Aa: felsic, cooler, much thicker, slow, forms jagged, sharp, blocks.

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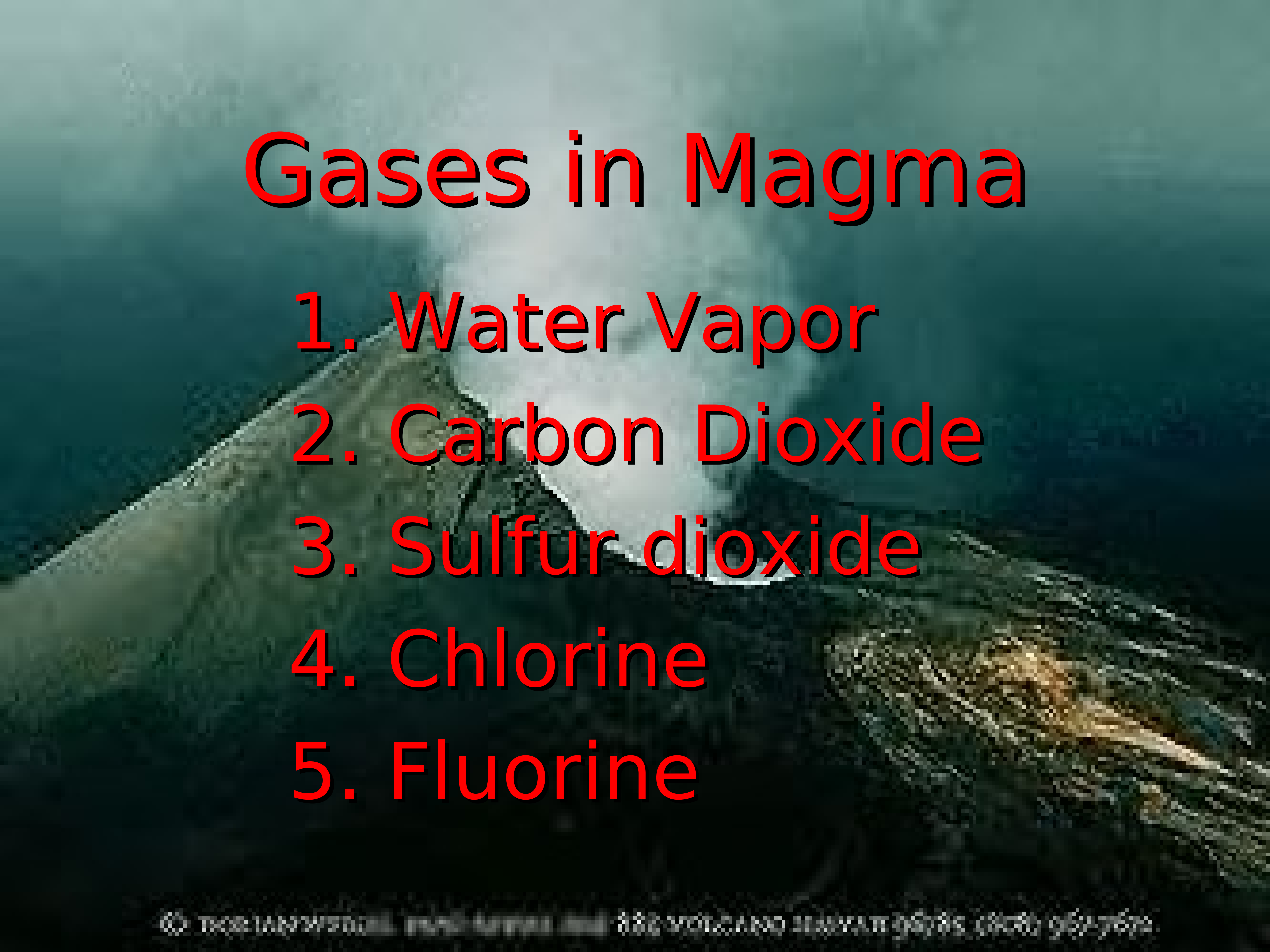
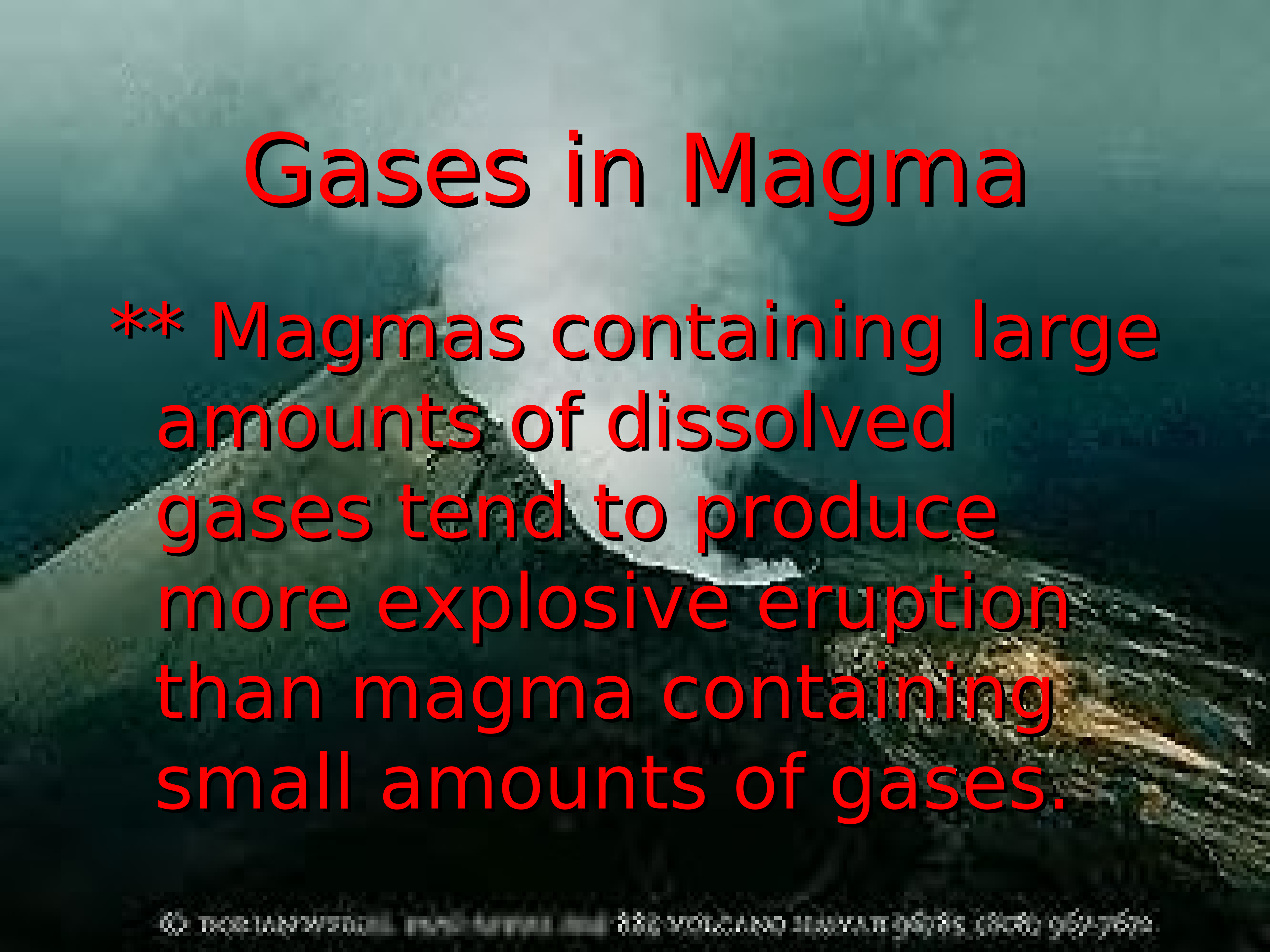


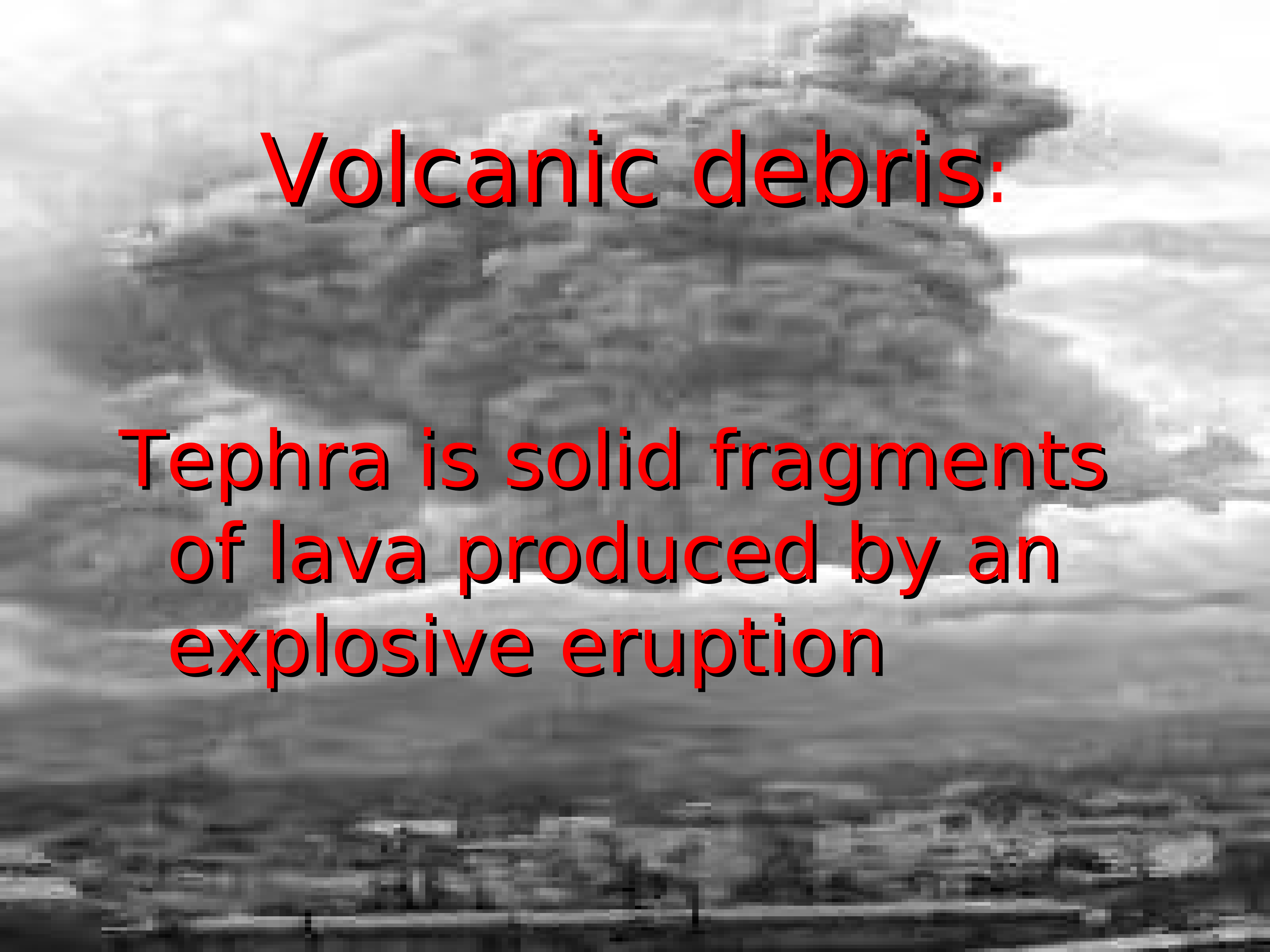
Gases in Magma

1. Water Vapor
2. Carbon Dioxide
3. Sulfur dioxide
4. Chlorine
5. Fluorine



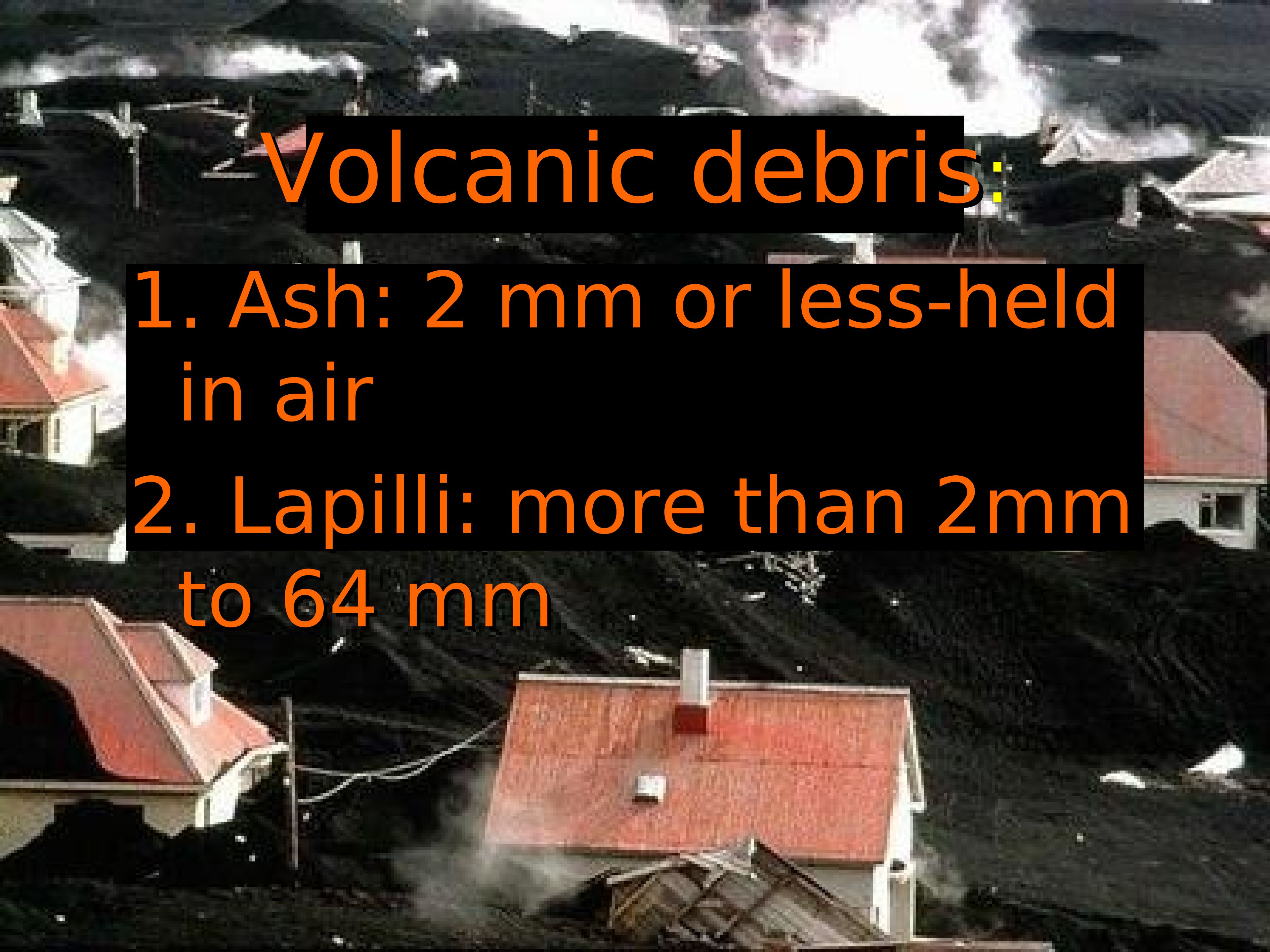
Gases in Magma

** Magmas containing large amounts of dissolved gases tend to produce more explosive eruption than magma containing small amounts of gases.



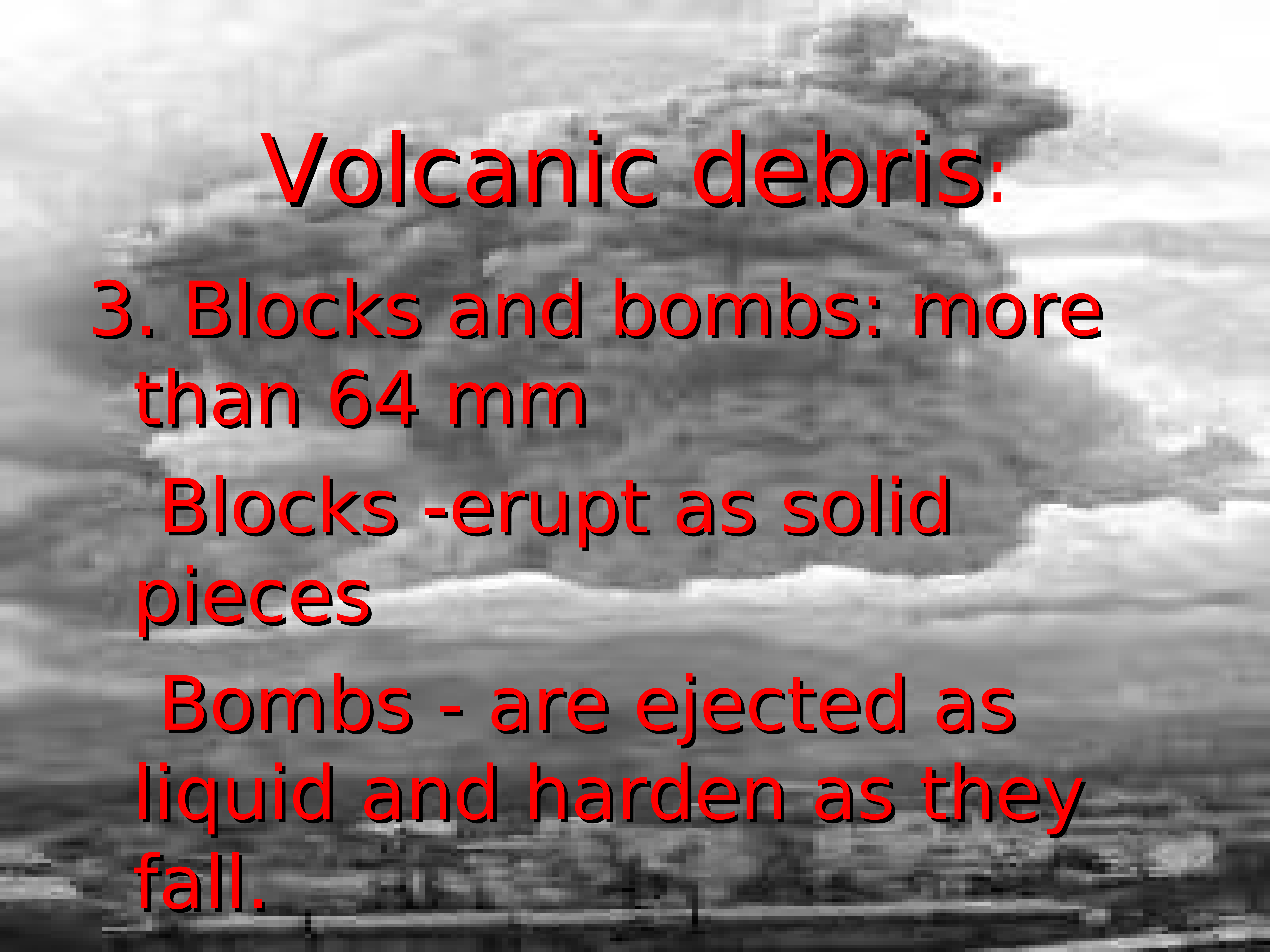
Volcanic debris:

Tephra is solid fragments of lava produced by an explosive eruption



Volcanic debris:

1. Ash: 2 mm or less-held in air
2. Lapilli: more than 2mm to 64 mm

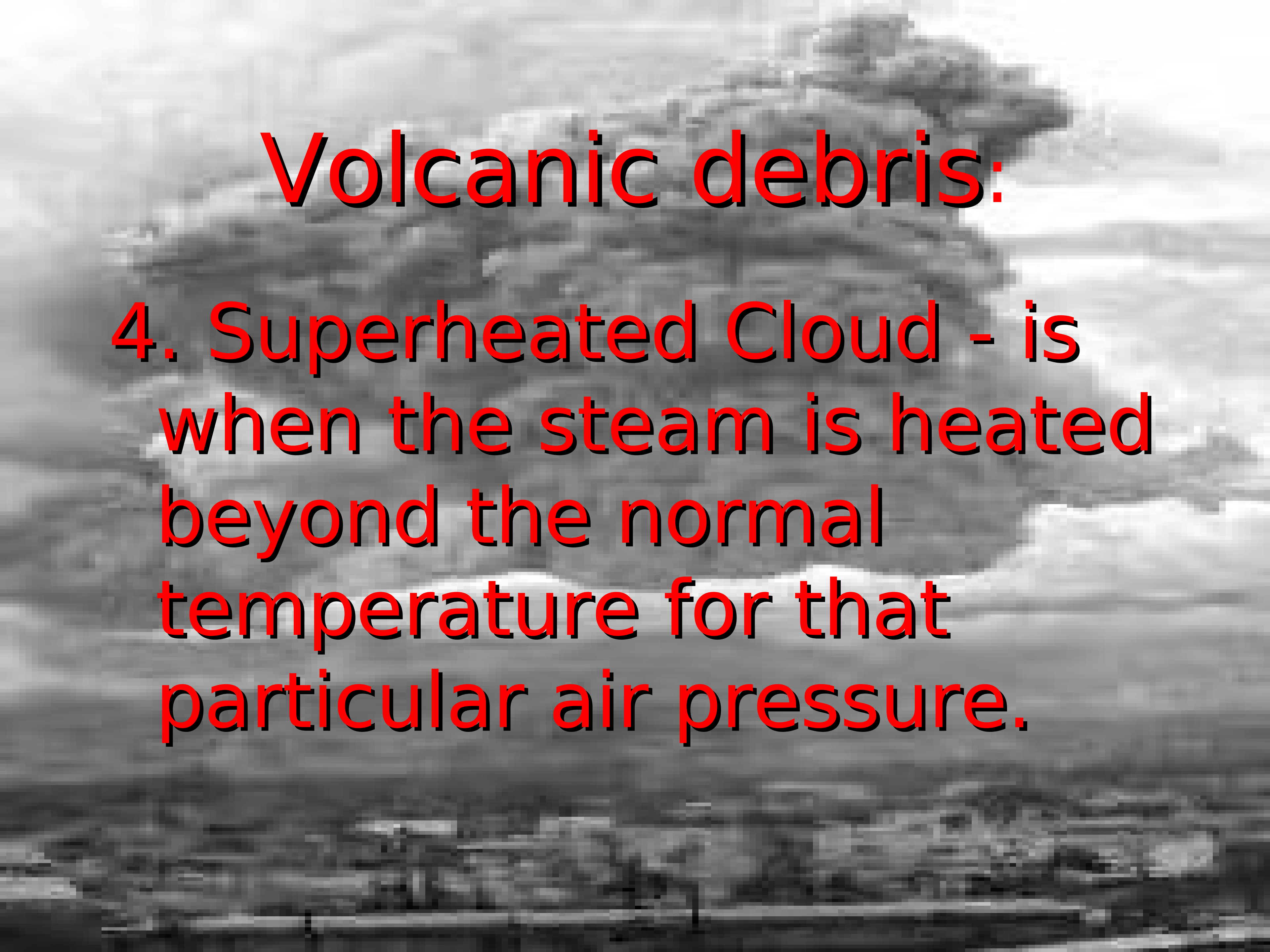


Volcanic debris:

3. Blocks and bombs: more than 64 mm

Blocks -erupt as solid pieces

Bombs - are ejected as liquid and harden as they fall.



Volcanic debris:

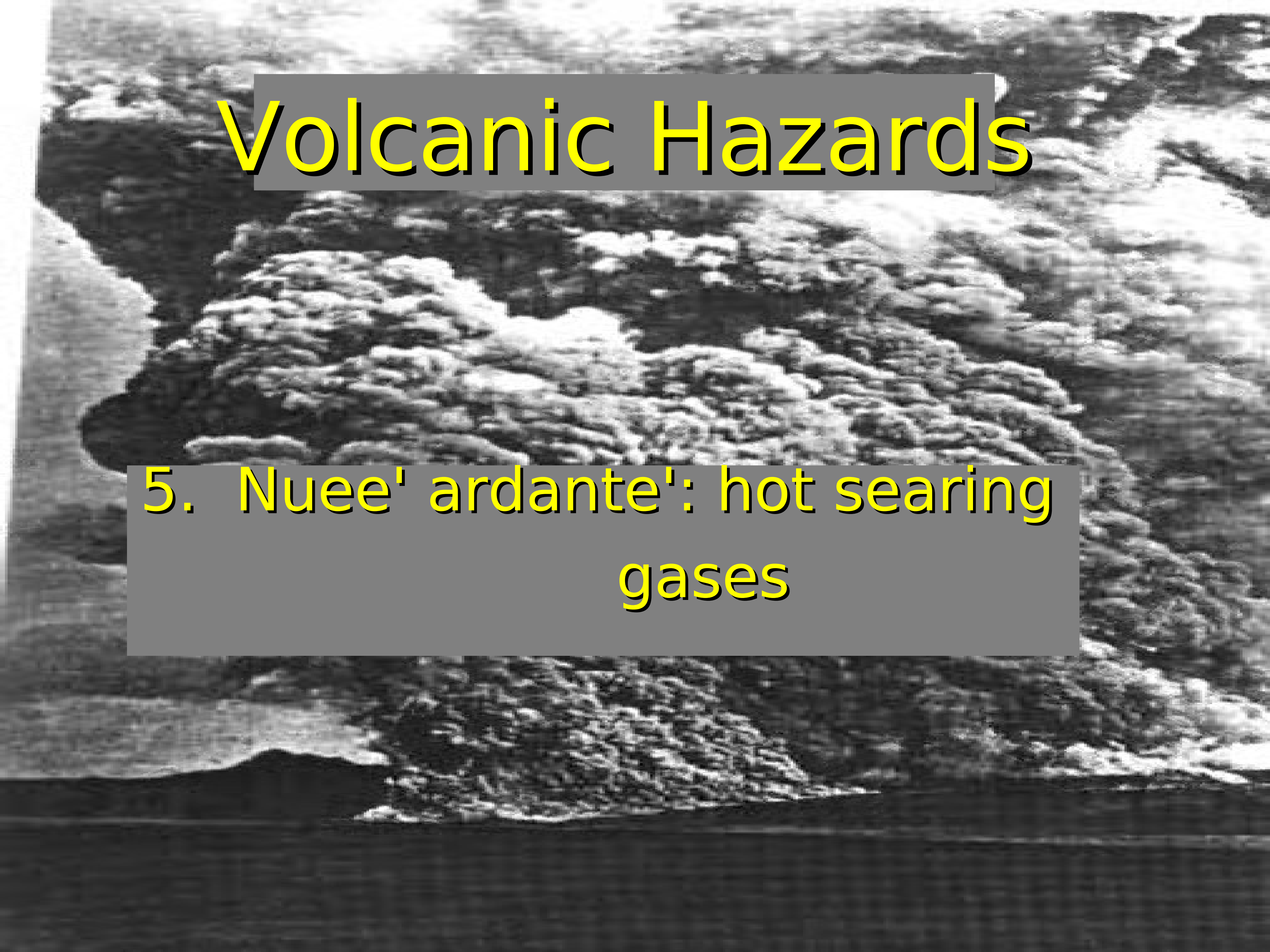
4. Superheated Cloud - is when the steam is heated beyond the normal temperature for that particular air pressure.

Volcanic Hazards

1. lava
2. poisonous gases
3. a blast sometimes creating shock waves (pressure waves)

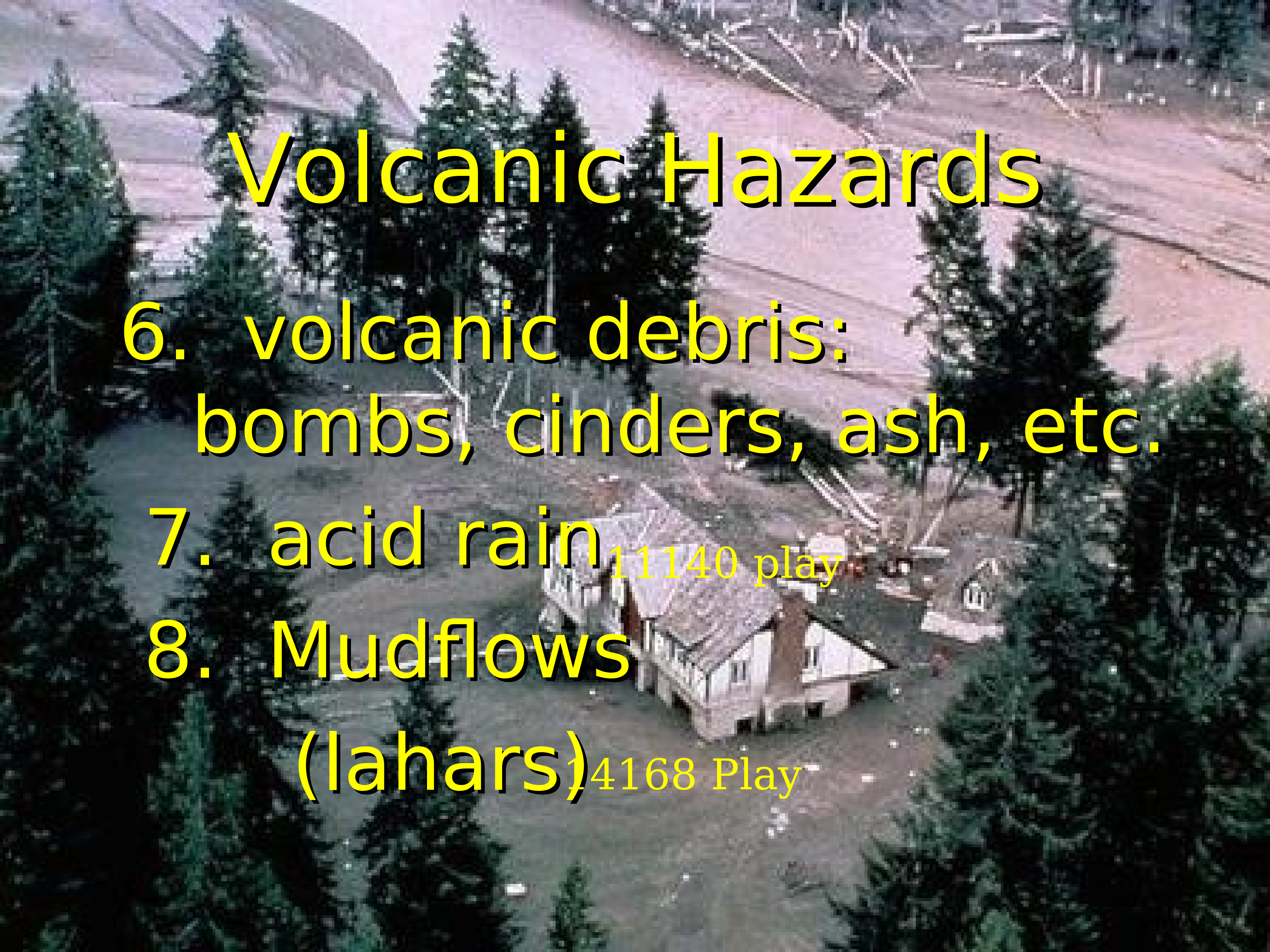
Volcanic Hazards

4. thunderstorms and lightning



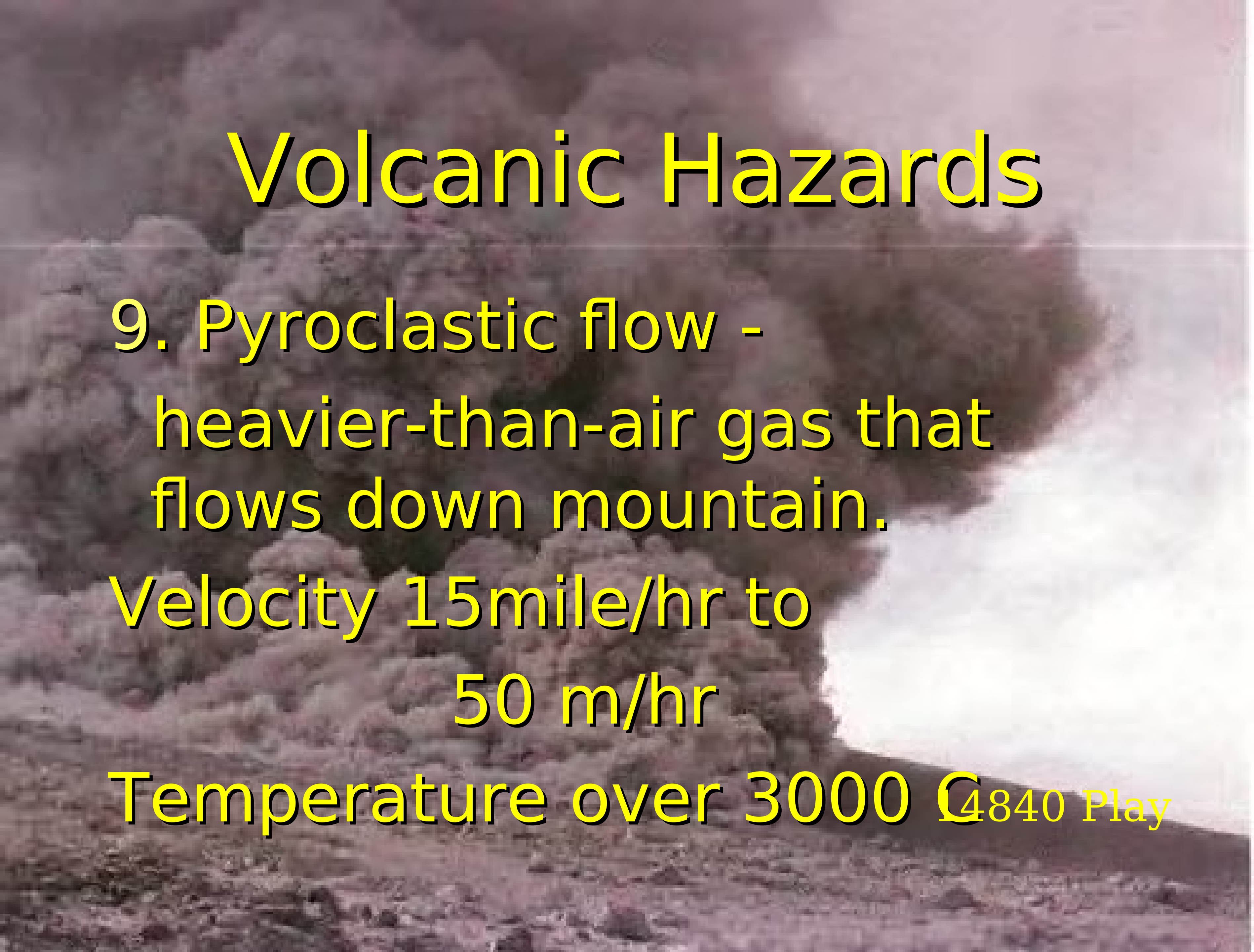
Volcanic Hazards

5. Nuee' ardante': hot searing gases



Volcanic Hazards

6. volcanic debris: bombs, cinders, ash, etc.
7. acid rain 11140 play
8. Mudflows (lahars) 14168 Play



Volcanic Hazards

9. Pyroclastic flow -

heavier-than-air gas that flows down mountain.

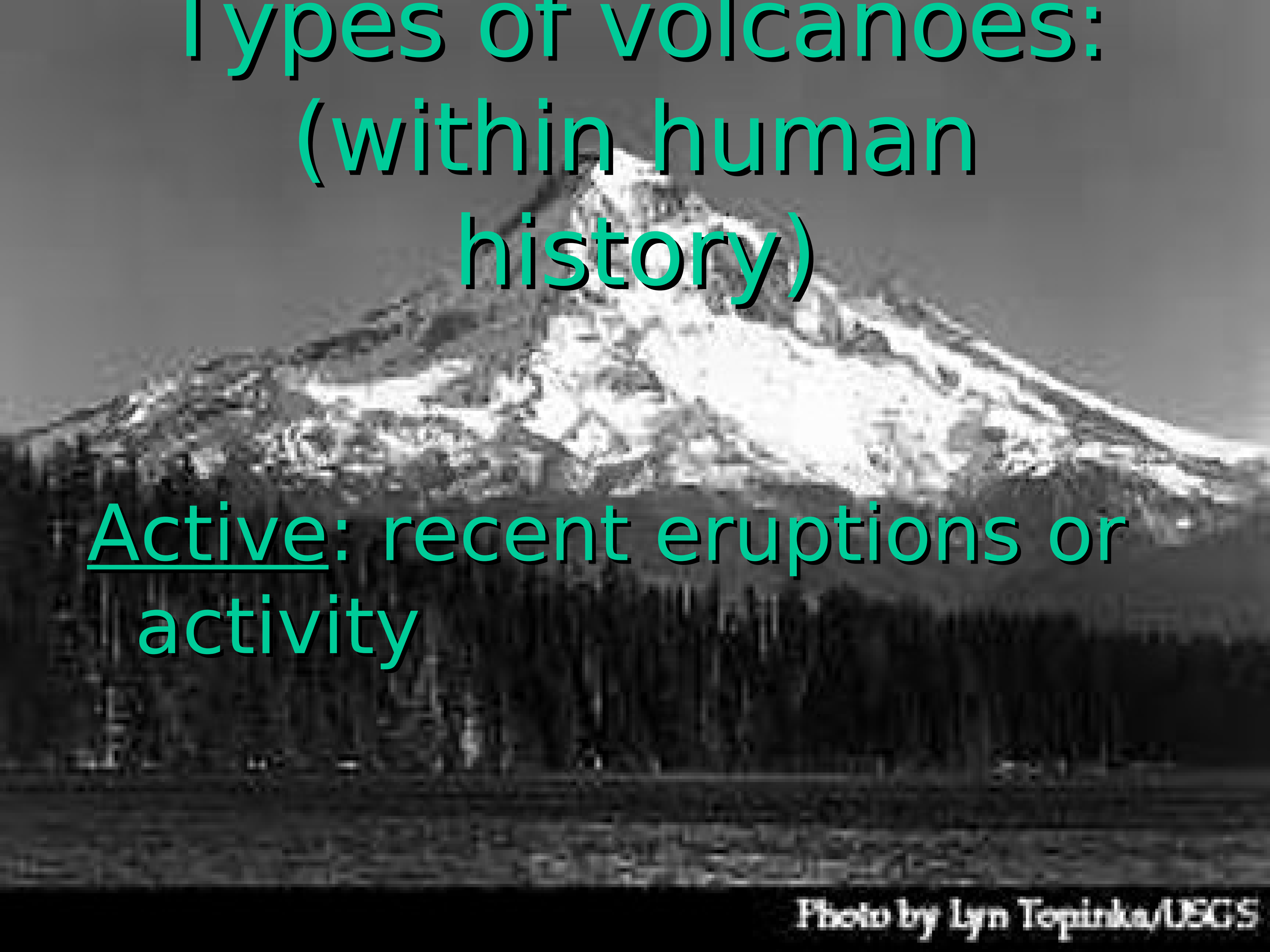
Velocity 15mile/hr to

50 m/hr

Temperature over 3000 C

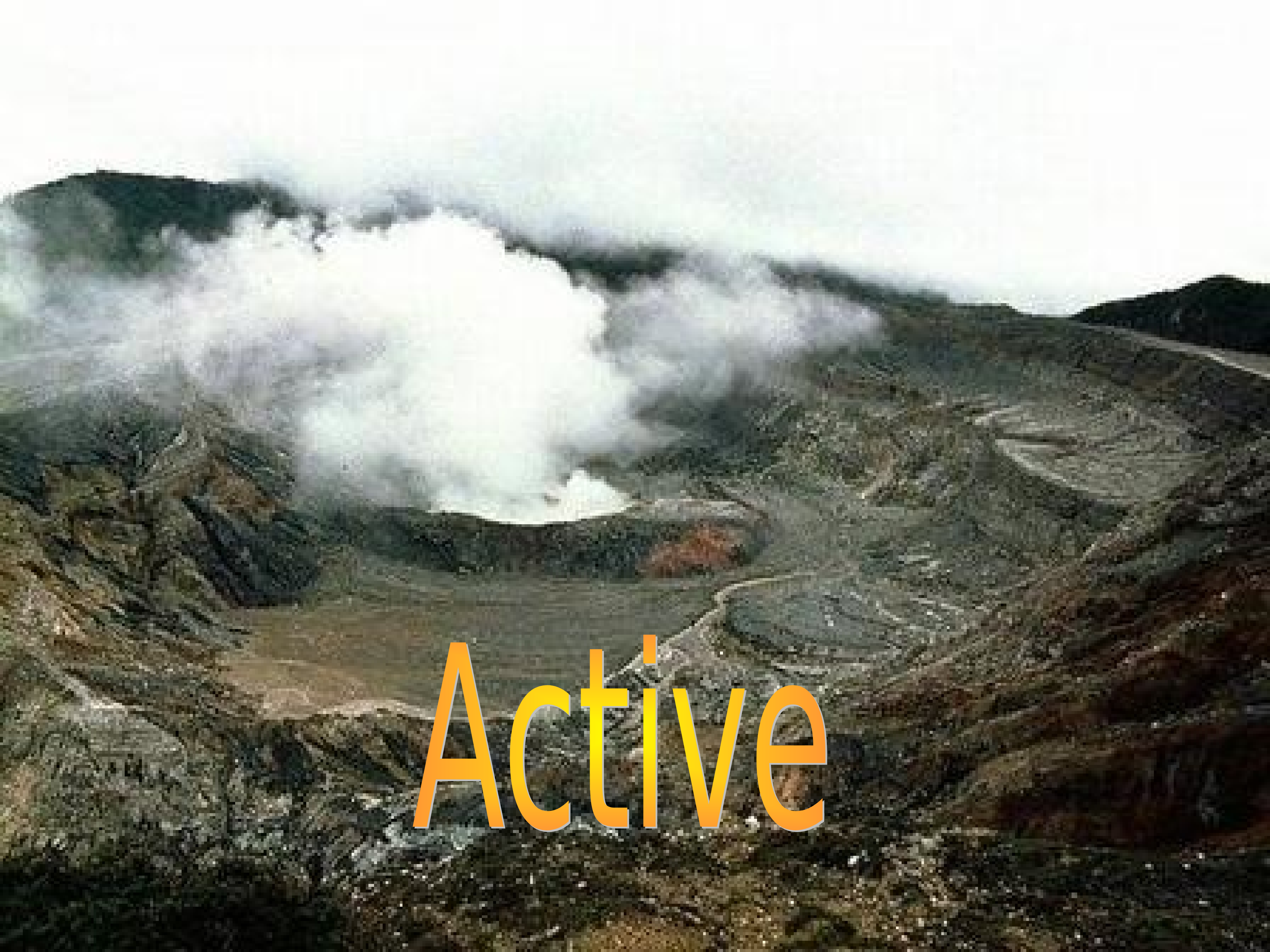
14840 Play

Types of volcanoes: (within human history)



Active: recent eruptions or activity

Photo by Lyn Topinka/USGS



Active

Types of volcanoes: (within human history)

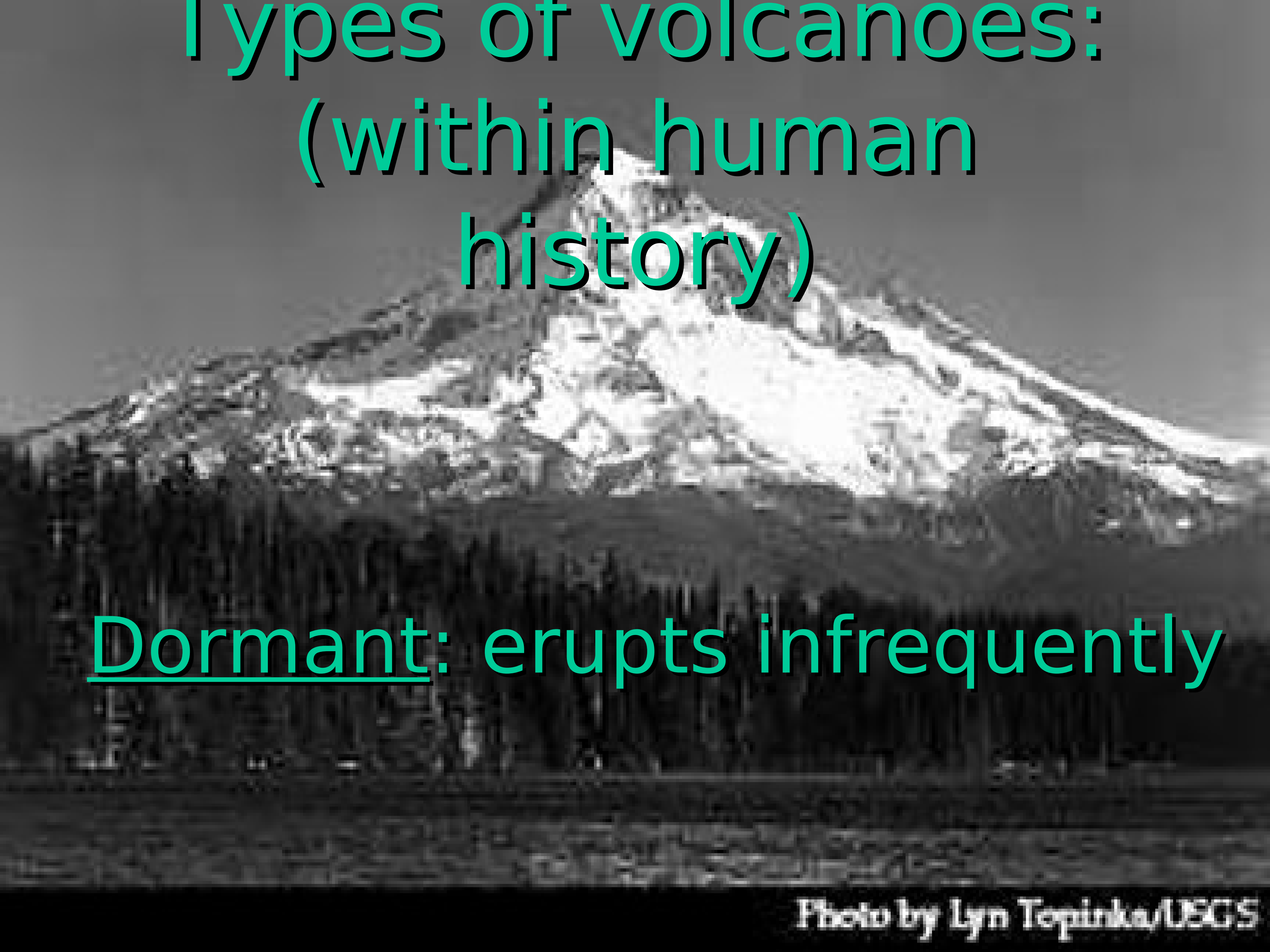
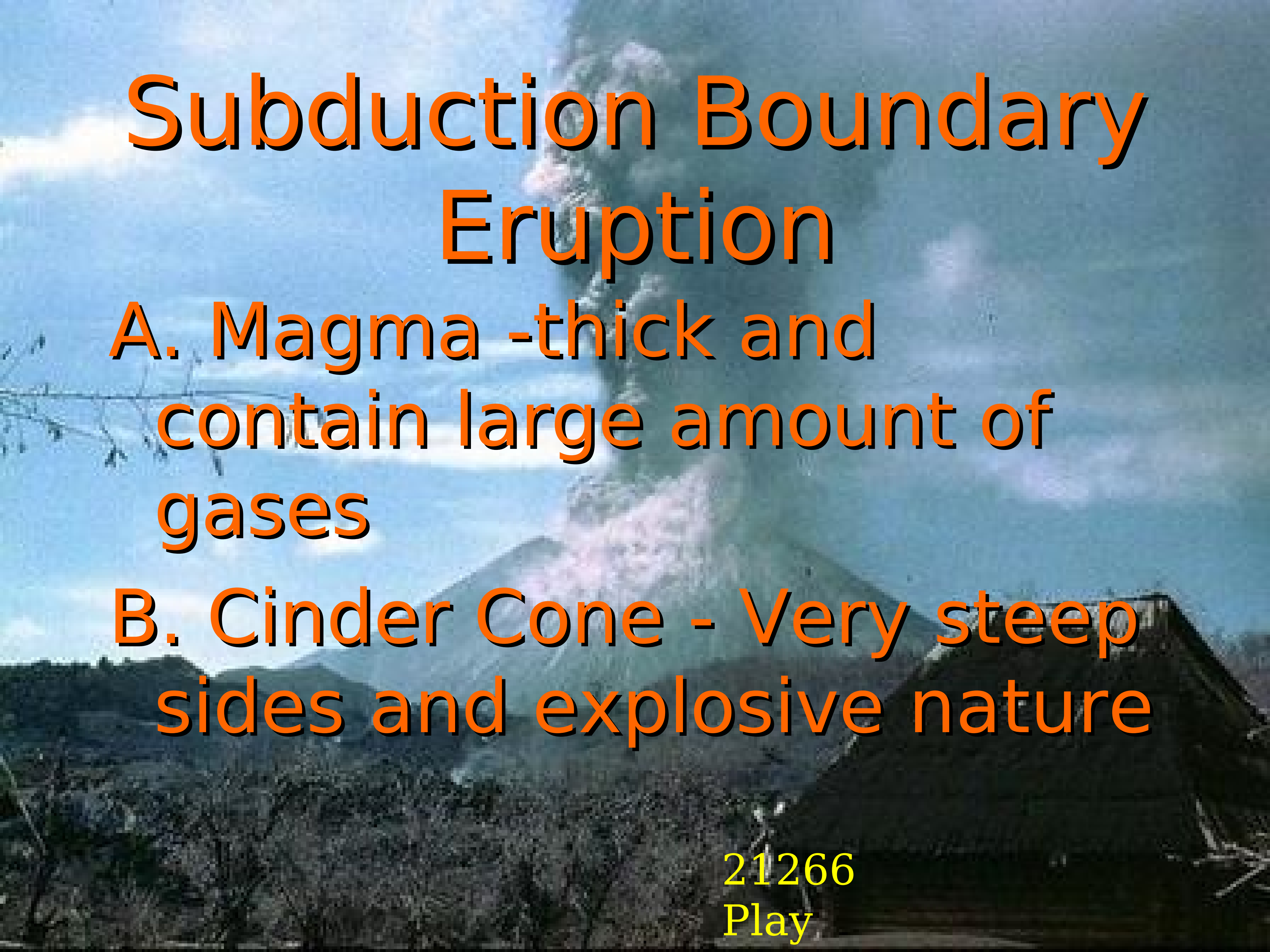


Photo by Lyn Topinka/USGS

Dormant: erupts infrequently

Dormant

Subduction Boundary Eruption



A. Magma -thick and contain large amount of gases

B. Cinder Cone - Very steep sides and explosive nature

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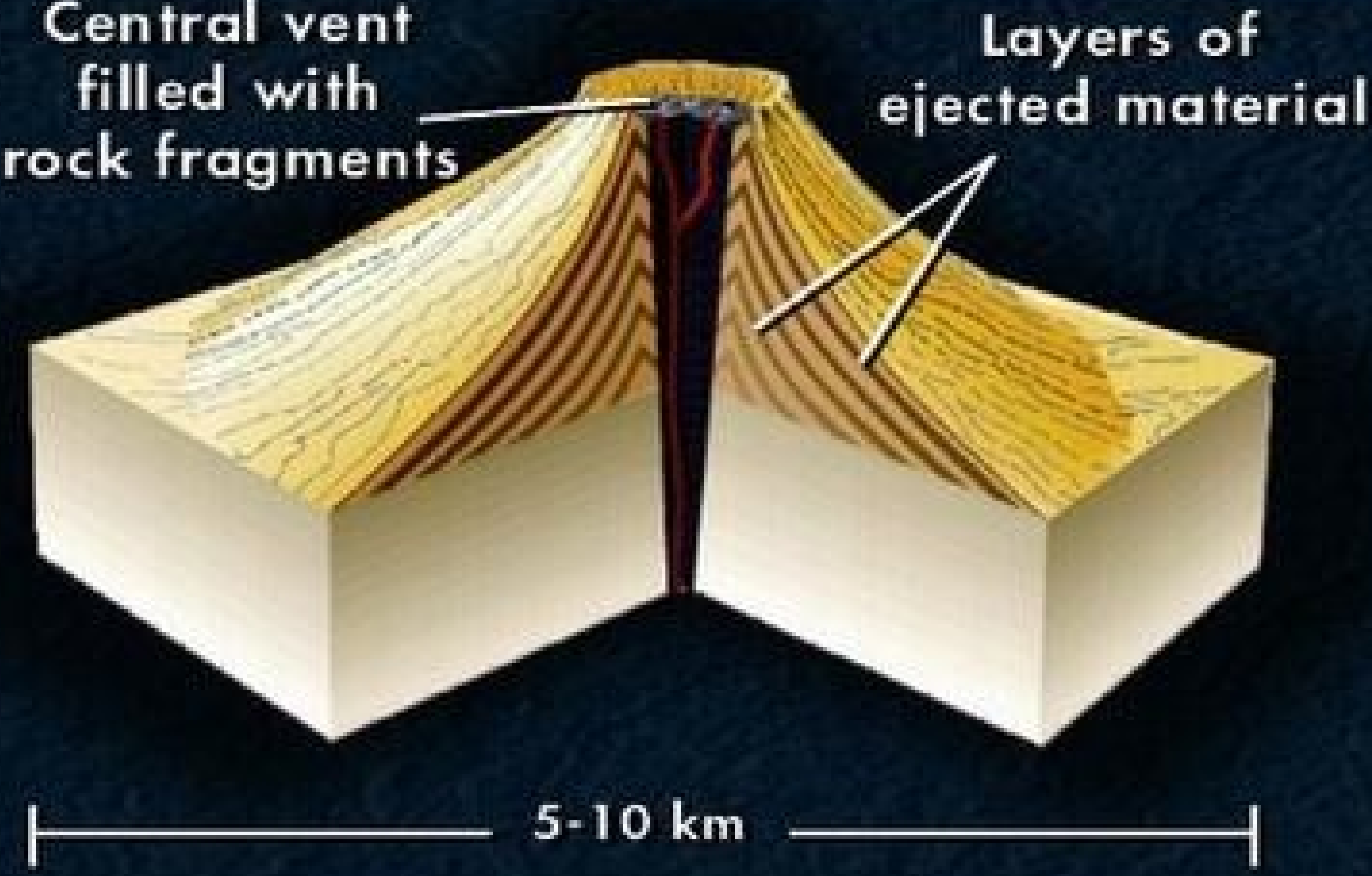
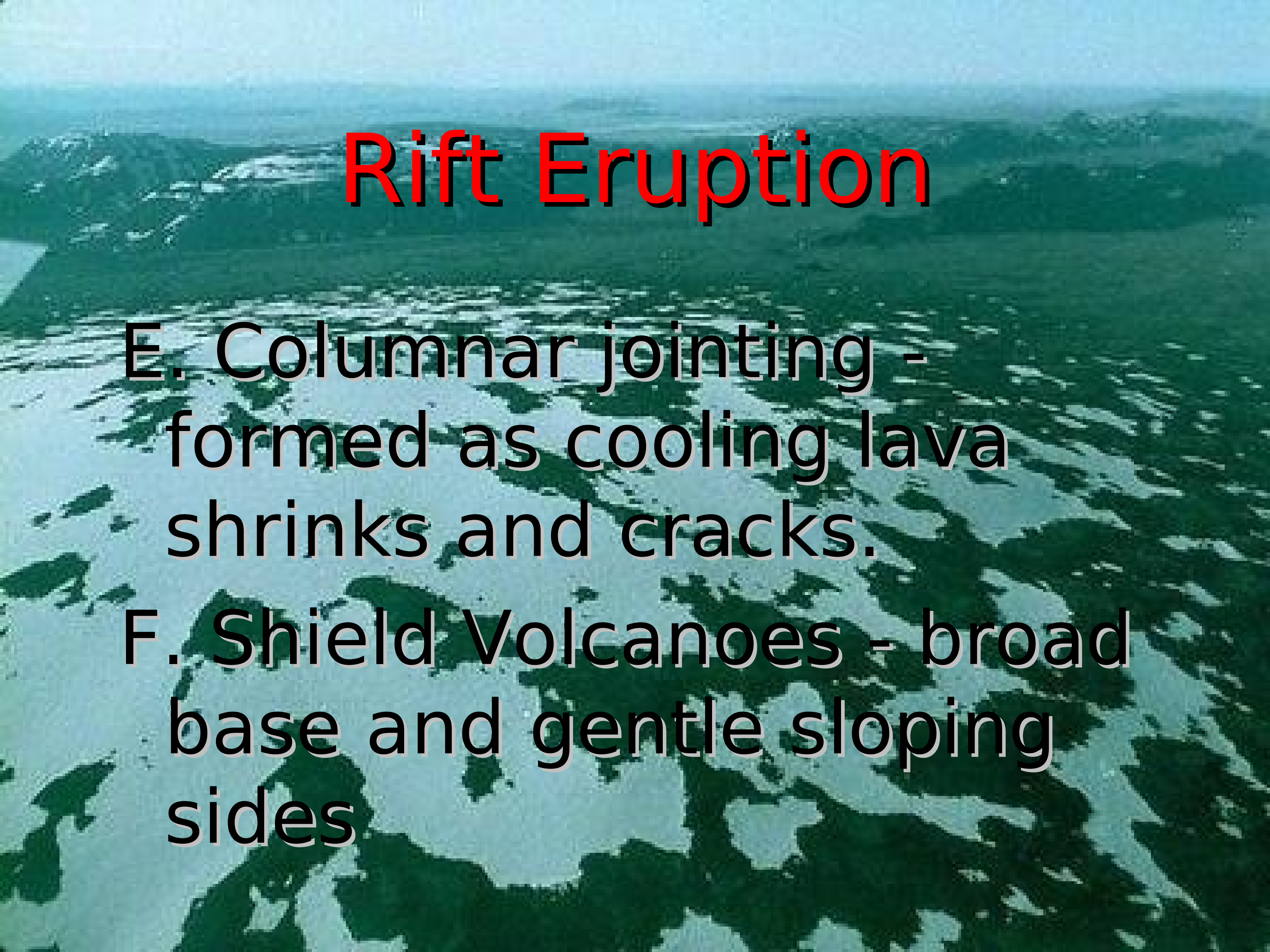
Cinder Cone Volcano

(*Examples: Parícutin, Cerro Negro*)


Central vent filled with rock fragments
Layers of ejected material
5-10 km

Rift Eruption

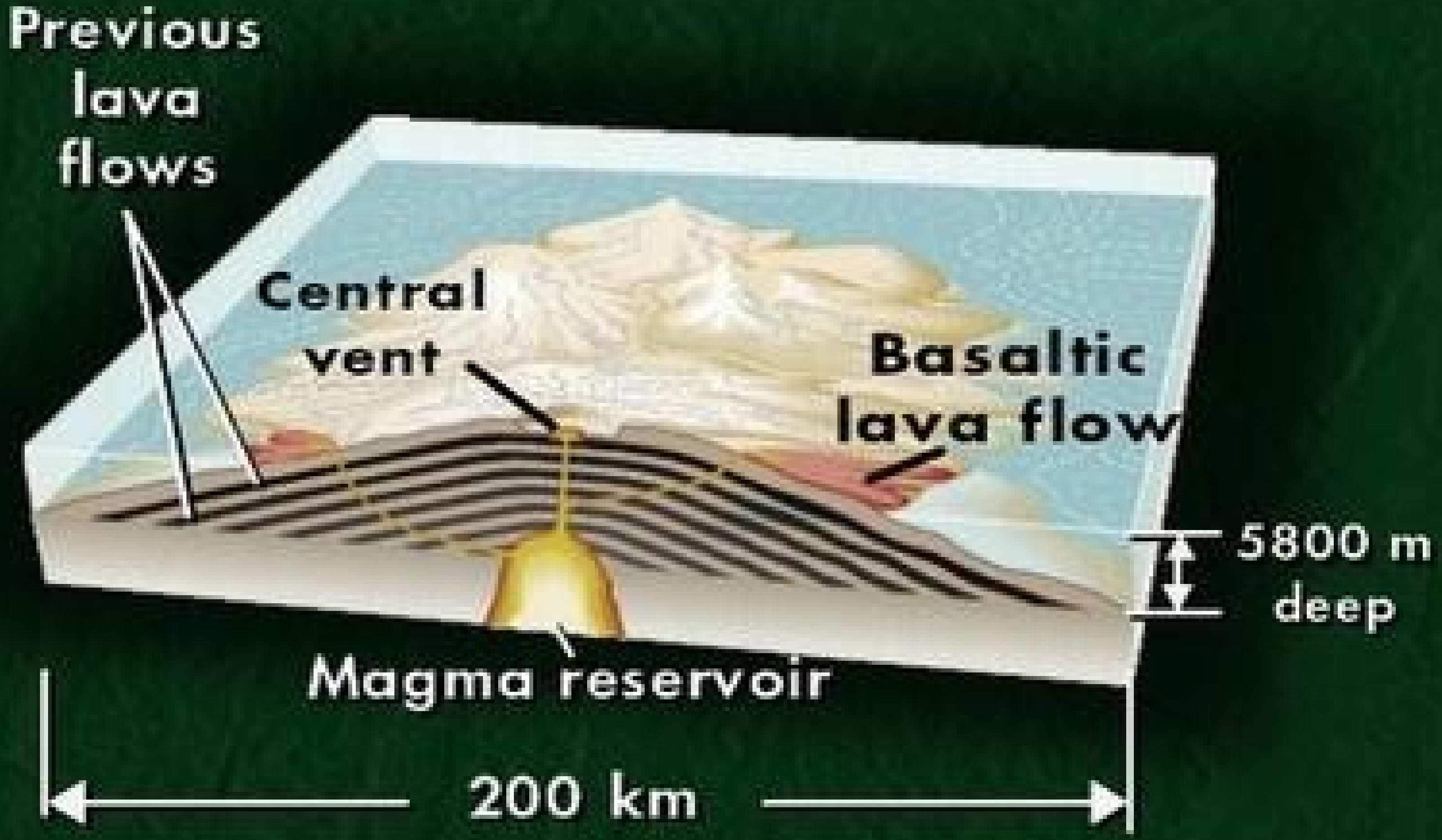


E. Columnar jointing - formed as cooling lava shrinks and cracks.

F. Shield Volcanoes - broad base and gentle sloping sides

Shield Volcano

Modeled on Mauna Loa, Hawaii



Hot spots

A.Composite Volcanoes - very steep sides where lava flows out and not explosive.

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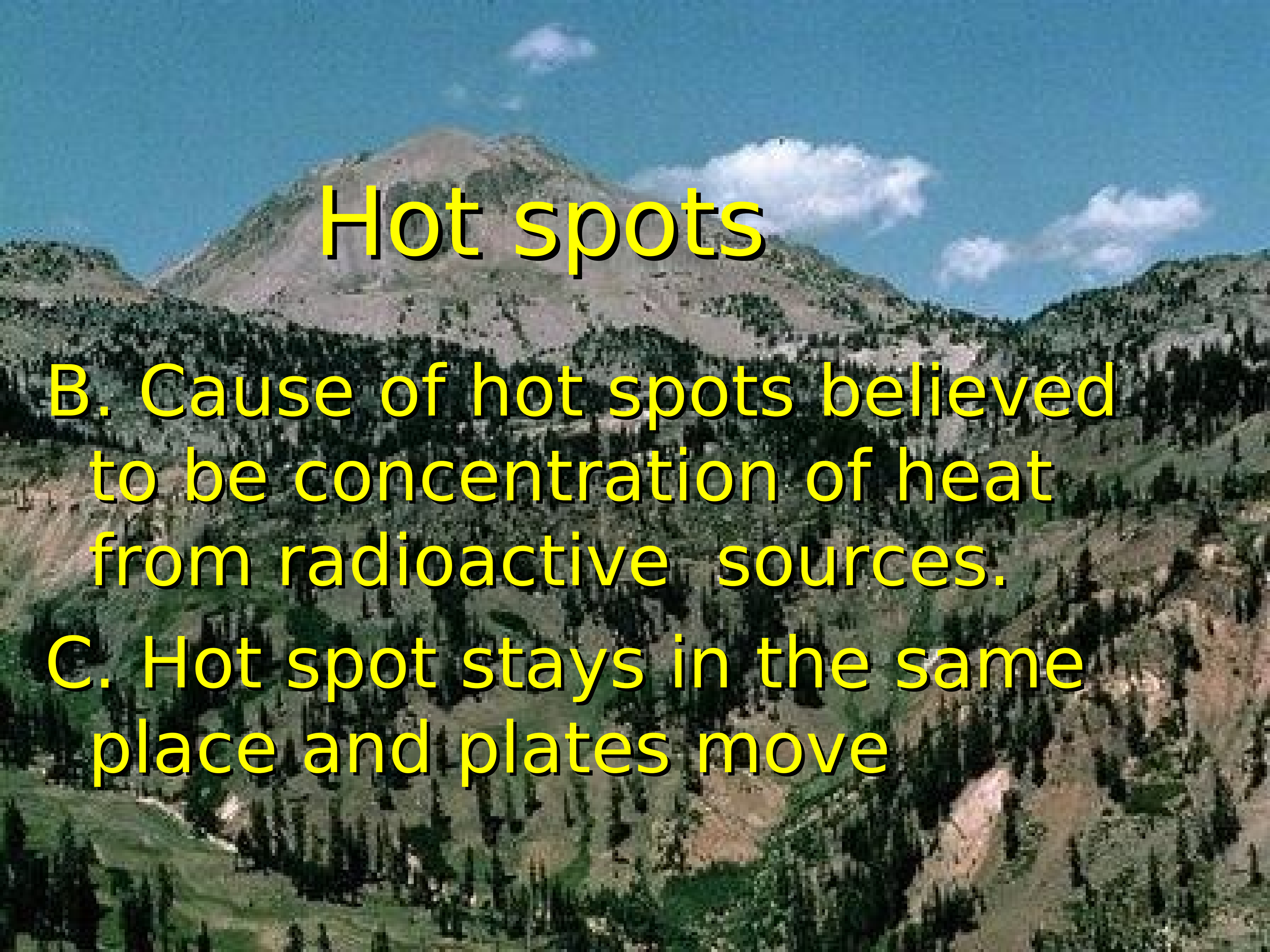
Hot spots

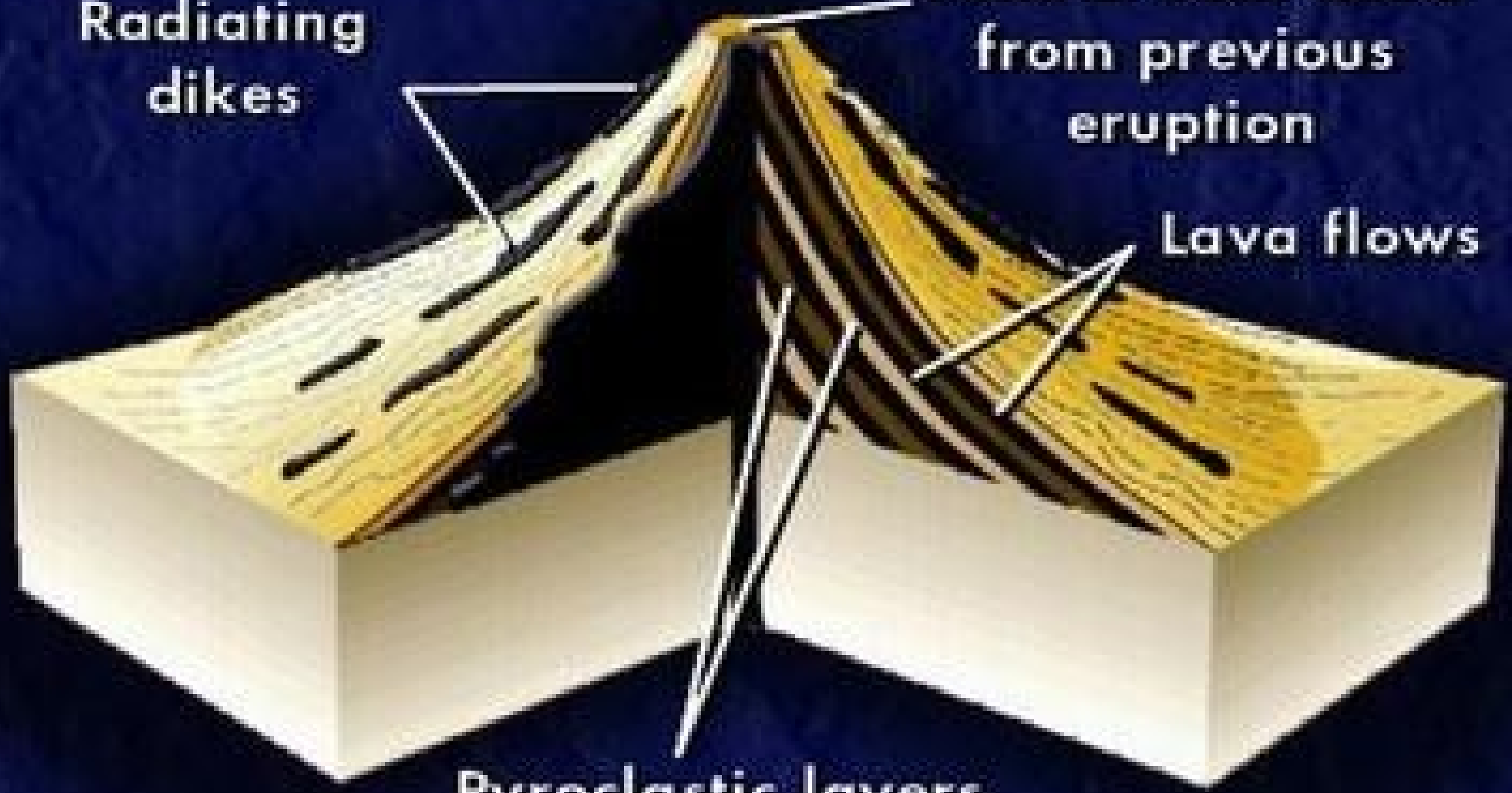


B. Cause of hot spots believed to be concentration of heat from radioactive sources.

C. Hot spot stays in the same place and plates move

Composite Volcano

(Examples: Mount Etna, Mount St. Helens)



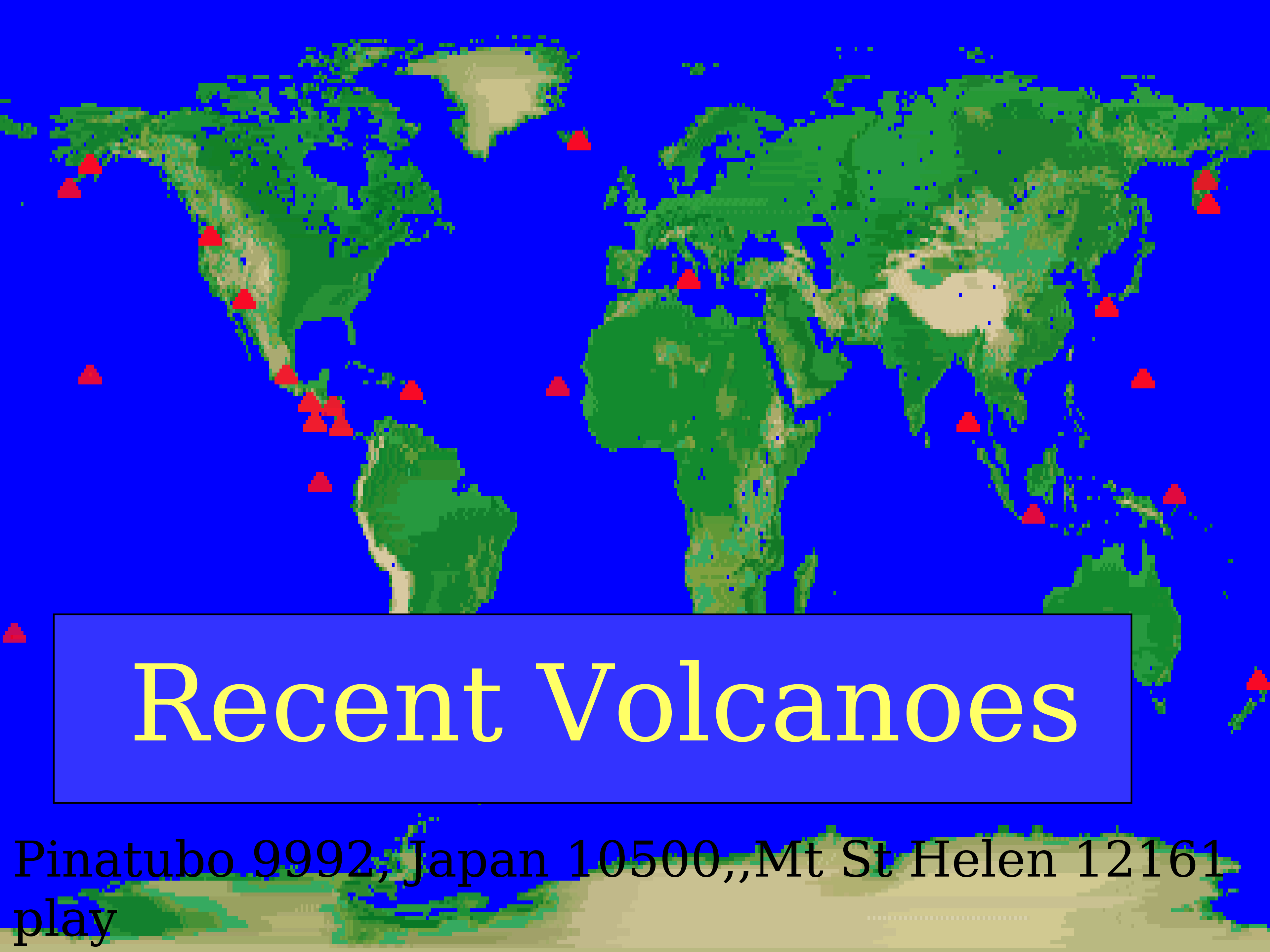
Central vent filled from previous eruption

Radiating dikes

Lava flows

Pyroclastic layers

5-10 km



Recent Volcanoes

Pinatubo 9992,,Japan 10500,,Mt St Helen 12161
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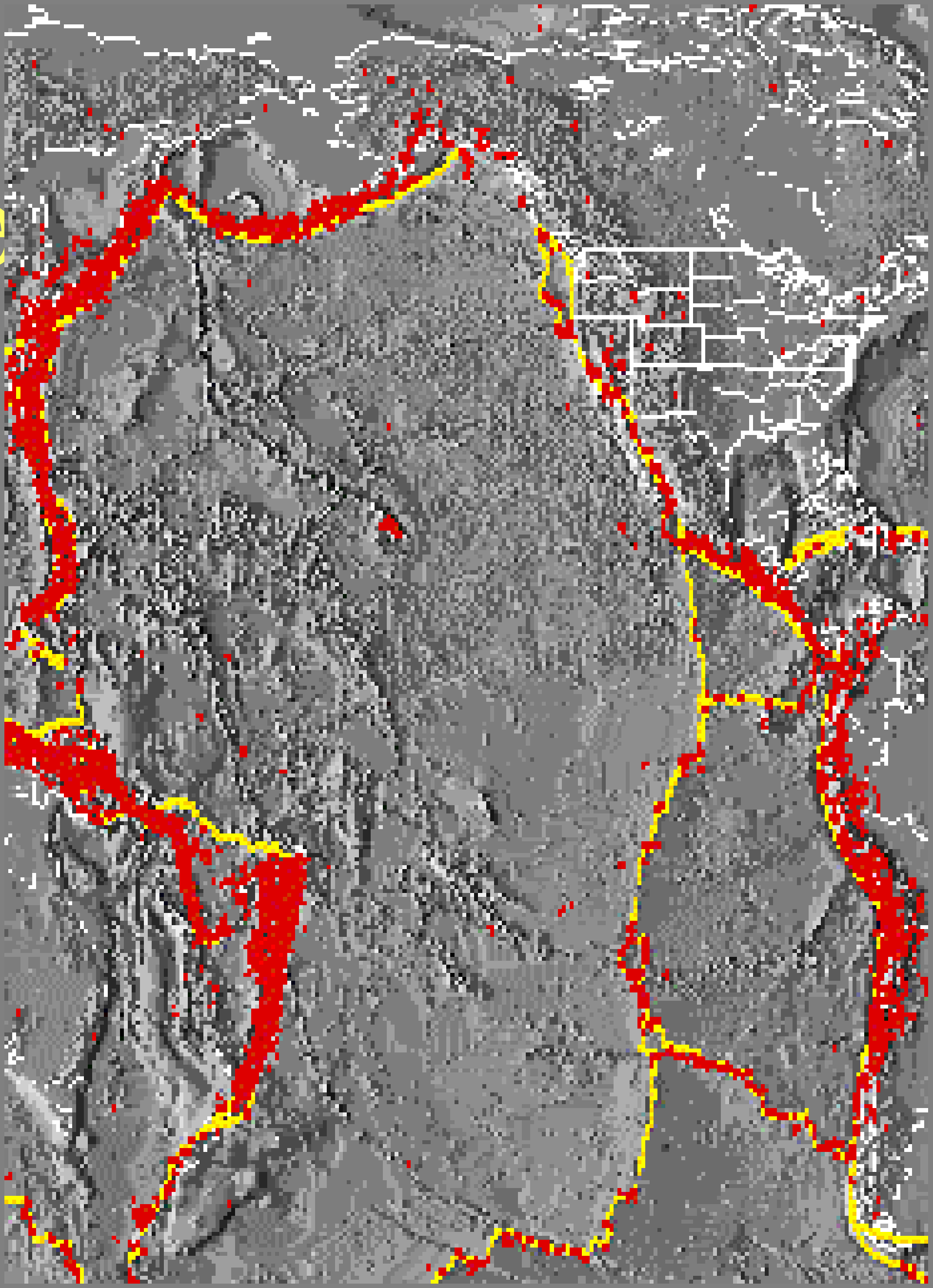
Ring of Fire



Great Volcanic Eruption

1. Eldfell - rift eruption
2. Mount St Helen - Subduction boundary eruption
3. Kilauea- Hot spot eruption
4. Vesuvius- Subduction boundary

Great Volcanic Eruption

5. Krakatau - Subduction boundary
6. Crater lake- Subduction boundary
7. Pinatubo